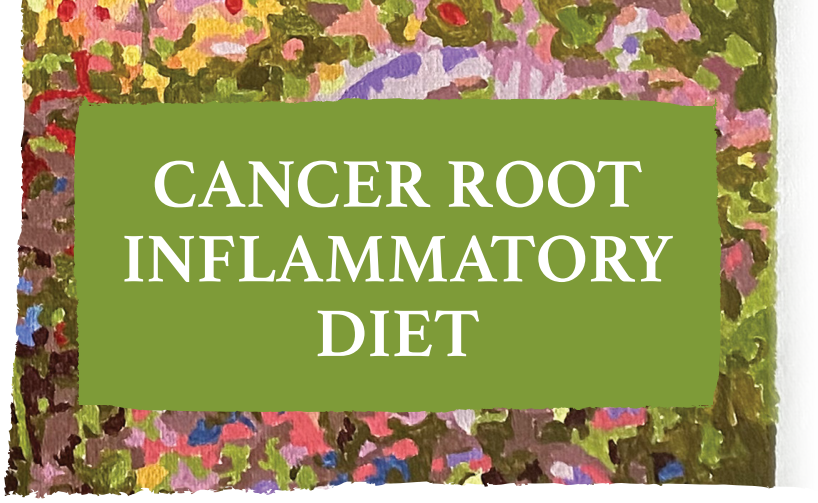
Healing Cancer at the Root
HYPERION
Functional Medicine



CANCER ROOT INFLAMMATORY DIET

Cancer cell and tumor formation is a multistage process, a series of events occur in the body over an extended period that cause changes to normal cells. Accumulation of genetic and epigenetic alterations leads to the transformation of a normal cell into a malignant cancer cell.

We look at the cancer hallmarks introduced by Dr.'s Hanahan and Weinberg in 2011[1]. We then can better understand how this is allowed to happen, that cancer cells acquire several abilities that normal healthy cells do not possess: they become resistant to growth inhibition, then continue to proliferate without dependence on growth factors, cancer cells can replicate without limit, evade apoptosis (natural cell death), invade other parts of the body, and support their own cancer blood vessels for tumor growth and spread[2]. In addition, Cancers result from the dysregulation of more than 500 genes at multiple steps in cell signaling pathways[3]. But most important to understand is of all cancers, 90–95% are attributed to impacts from the patient's lifestyle with the remaining 5–10% attributed to faulty genes[4]. This reference was from 2010, almost 15 years ago. But today, cancer patients are still not given the information they need to impact their cancers progression or regression through potential "causes" they have some control in overcoming. Cancer has many roots.

Diet and nutrition education impacting the cancer patient's diagnosis and test results that could impact cancer tumor growth is critical for patients and healthcare providers to understand. In many standard of care oncology programs patients are told "you can eat whatever you want "as they begin to lose weight or their appetite for food starts to change or decrease. Inflammation from food has become a known route for cancer development and proliferation. Patients and caregivers need to understand the drivers of inflammation arising from our food sources. It is important for patients to maintain caloric intake, but food choices need to be made based on their inflammatory and toxic attributes.

To plan the cancer patient's diet, it is important to understand what nutraceuticals are and how and why they must be applied to the cancer treatment protocol for all cancer patients. A nutraceutical is simply any substance considered to be a food or part of a food that provides medical and health benefits. The word is formed by combining the words nutrition and pharmaceutical. Nutraceuticals are known to be chemically diverse and therefore they target multiple steps in tumor cell development. Some nutraceuticals are in clinical trials and others have been approved for human use[5].

We use nutraceuticals extensively in functional oncology for all patients because they target cancer cell's ability to survive, proliferate, invade other tissues, and form their own blood vessels. **Nutraceuticals** also influence various steps of tumor cell development targeting multiple molecules of inflammation, reducing it. In other words, they impact the cancer hallmarks driving cancer growth and proliferation. Nutraceuticals can be obtained from foods and supplements and should be prescribed by a licensed professional with experience using these pharmaceutical grade supplements.

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These foods are healthy choices to reduce inflammation:
Treating food as medicine and reducing inflammation is the goal when cancer patients are making food choices. The immune system becomes weaker with prolonged inflammation and the ability to fight cancer is reduced.

Number one in the cancer patient's diet: limit or completely avoid processed foods. These are high in refined sugars and fats that are unhealthy driving inflammation. They are lower in quality nutrients and loaded with artificial ingredients that further increase inflammation. Highly processed foods in this category include fast foods, instant and packaged foods, and many frozen foods. You must read the label. If you don't understand the words on that label, you are likely reading about additional toxic ingredients.

Processed meats purchased in the deli, in packages, bacon, sausage, hotdogs, and pepperoni are highly inflammatory. Avoid these foods. Avoid sodas and sports drinks, most are high in sugar. Avoid processed sugar at all costs.

Sugar and cancer: all cells in the body, including cancer cells, need glucose, a form of sugar, for energy. In addition, eating too much sugar, especially added sugars in processed foods and drinks, can lead to obesity, which is a major risk factor for cancer. Because cancer cells grow faster than normal cells, they require more energy. It has been shown that glucose metabolism is often altered in cancer cells to meet the increased demand for glucose. Glucose is obtained from sugar. Overconsumption of sugar often leads to obesity which is a major risk factor for cancer. Patients should be cautious and take measures to avoid processed foods and read food labels while shopping looking for sugar containing products.

Choosing foods high in omega-3 fatty acids is important to help reduce inflammation. Fish oil contains omega-3 fatty acids, which are part of a healthy diet that is associated with reducing levels of inflammation. Your body can't make omega-3 fatty acids, they have to be obtained from the diet or in a supplement form. Eicosapentaenoic acid (EPA), docosahexaenoic acid (DHA), and alpha-linolenic acid (ALA) are the omega-3 fatty acids that make an impact. Foods that include omega three fatty acids include tuna, salmon, halibut, flaxseeds, chia seeds, almonds, walnuts, and avocado. Oils that are high in Omega-3 include olive and canola oil. Omega-3 supplements can also be used impact inflammation.
Limit your red meat intake. This includes pork, beef, lamb, bison and deer. This can increase your cancer risk because these meats increase inflammation. You can replace red meat with animal proteins like skinless chicken, turkey, and fish. These often contain Omega threes and help reduce inflammation.

Phytochemicals, also known as phytonutrients, are compounds found in plants that may help prevent and make an impact on cancer[6]. These plant foods are high in phytochemicals:

- Vegetables, such as broccoli, cabbage, collard greens, kale, cauliflower, and Brussels sprouts
- Fruits, especially brightly colored ones. Be cautious with fruits that contain a lot of sugar. Your nutritionist can help with learning what fruits to avoid.
- Beans
- Grains and cereals
- Nuts and seeds

Many supplements prescribed in Hyperion functional medicine's functional oncology program contain phytonutrients that directly impact the patient's cancer type and that cancer's specific cancer hallmarks driving growth and proliferation. The supplements are research based and every cancer patient is placed on a supplement plan targeting their type of cancer. This plan should be a part of every cancer patient's treatment protocol, the supplements are known to augment standard of care treatments with radiation and pharmaceuticals in many cases. Some of the supplements prescribed are protective of cells that may be damaged with treatment.

The benefits of increasing intake of cancer impacting phytochemicals include:

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- **Protecting cells and DNA:** Phytochemicals can and do protect cells and DNA from damage that could lead to cancer.
- **Reducing inflammation:** Phytochemicals may help reduce inflammation that may cause cancer or make it grow. In combination with the low inflammation diet, the anti-inflammatory effects are increased.
- **Slowing cancer cell growth:** research has shown specific phytochemicals may slow the growth rate of some cancer cells.
- **Boosting immunity:** Phytochemicals may help your immune system work properly, especially as they are reducing inflammation.

Filling your plate with at least two thirds of vegetables, whole grains and fruit and then the other one third with a lean protein or plant-based proteins is a good habit to get into with meal planning.
Hyperion functional medicine nutritionists teach patients the importance of nutrition in cancer, how to impact growth and proliferation of their cancers with food, and all patients are educated and supported on developing a detailed cancer nutrition plan. Many resources are provided through education on food choices to optimize the cancer patient's diet. Diet is central to cancer prevention and treatment. In the Hyperion functional oncology program, it is a number one priority to impact cellular inflammation by removing inflammatory foods with and foods toxins from the diet.

To sum up how cancer is impacted by an inflammatory diet, inflammation comes from many sources in our environment; the toxic inflammatory diet is the number one source driving inflammation and chronic disease for most people in this country. Prolonged exposure to inflammation through toxic foods and associated inflammation inducing toxins damages healthy cells and weakens the immune system. This chronic inflammation increases your risk of diseases like cancer and decreases your ability to fight cancer and infections. In addition, inflammation which persists for a long period of time, can harm the mitochondria's ability to produce energy and manage cells, which in turn leads to tissue damage[7]. Inflammation contributes to cancer cell development, malignant transformation, tumor growth, invasion, and metastatic spread[8].

> Cancer patients with a history of taking chemotherapy agents, radiotherapy, and many other pharmaceutical treatments are at risk for damage to the mucosa in the gut. An anti-inflammatory diet will help reduce this inflammation and optimize the absorption of nutrients. Many times, nutrition is impacted by cancer treatment and all cancer patients are offered testing in the phase 1 oncology program to evaluate their nutritional status and then offered treatment to maximize nutrition and healing from cancer.

CANCER ROOTS
Collaborating for a Cure

In partnership with healingstrong

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